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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,868	04/11/2002	Yuri Evgenievich Korchev	GJE-81	8909
23557	7590	11/16/2004	EXAMINER	
SALIWANCHIK LLOYD & SALIWANCHIK A PROFESSIONAL ASSOCIATION PO BOX 142950 GAINESVILLE, FL 32614-2950			HANLEY, SUSAN MARIE	
			ART UNIT	PAPER NUMBER
			1651	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/030,868

Applicant(s)

KORCHEV ET AL.

Examiner

Susan Hanley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 18-33, 35-50 and 52 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 18-33, 35-50 and 52 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

Susan Hanley is now the examiner of record for this application. Her contact information can be found at the end of this Office action.

Claims 18-33, 35-50 and 52 have been presented for examination.

### Response to Arguments

#### *Claim Rejections - 35 USC § 102*

Claims 18-27, 35-39, 50 and 52 stand rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lewis et al. (US 4,917,462).

Applicant argues that Lewis et al. utilizes a non-modulated ion current to control the probe position over a sample, whereas the claimed apparatus utilizes frequency-modulated scanning and modulation of the ion current to control the position of the probe. Applicant asserts the movement of the microscope tip ( $\Delta Z$ ) generates a modulated current  $I_{MOD}$  and that this modulated current is only generated when the probe senses the sample and is used for feedback control of the microscope. Applicant alleges that the feedback control protocol has advantages over a non-modulated mode including greater signal/noise ratio; high stability, higher scan speed and increase in lateral sensitivity. Applicant further argues the Lewis et al. patent does not teach or suggest imaging an object in a liquid environment.

Applicant's arguments filed 8/26/04 have been fully considered but they are not persuasive.

Responding to Applicant's assertion that Lewis et al. do not teach an apparatus that utilizes a frequency-modulated scanning which is used for feedback control of the microscope, Applicant's attention is directed to the phrase "vibrating the probe substantially normal to the surface" in claim 18. The broadest reasonable interpretation of "vibrate" is to move back and forth. The instant specification supports this definition on page 7, lines 4-7 when describing the movement of the probe: "the position of

the probe wherein the movement of the microscope tip ( $\Delta Z$ ) generates modulated current  $I_{MOD}$ " and at Figure 2B which represents the translation of the probe in the  $\Delta Z$  direction. Applicant's attention is directed to col. 11, lines 27-51 of the Lewis et al. patent. Lewis et al teaches that the tip of the pipette constitutes a small electrode that has a measurable current which varies with the distance between the surface of the object and the tip of the pipette which corresponds to the claimed  $\Delta Z$  direction. Lewis et al. teach that this current is measured by a sensor, as required by line 3 of instant claim 18. Therefore, the detected current disclosed by Lewis et al. corresponds to the claimed modulated current  $I_{MOD}$  because said detected current varies in response to changes in the distance between the pipette tip having the small electrode and the surface of the object. Thus Lewis et al. teach modulation feedback because the current in the small electrode at the tip of the pipette changes in response to its vertical proximity ( $\Delta Z$ ) to the surface of the object. The limitation regarding "vibrating the probe substantially normal to the surface" is also met by Lewis et al. because the pipette moves back and forth in the vertical direction ( $\Delta Z$ ) in response to the detected current which is a function of the feedback of the modulated current.

Regarding Applicant's alleged advantages of the instant invention, it is noted that none of said advantages are claimed limitations of the instant claims.

Responding to Applicant argument that Lewis et al. neither teach nor suggest imaging an object in a liquid environment, Applicant's attention is directed to col. 4, lines 15-19 of the referenced patent which states that one object of the invention is to use the disclosed apparatus to study "live cells and cellular colonies in their living aqueous environment." Therefore, the disclosure by Lewis et al. meets the limitation of claim 35 requiring that the object is imaged in a liquid environment.

Therefore, the disclosure by Lewis et al. clearly anticipates the indicated amended claims.

#### *Claim Rejections - 35 USC § 103*

Claims 18-33, 35-50 and 52 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (US 4,917,462) in view of Islam (US 5,485,536) and further in view of Tan (1998).

Applicant argues that the claims are not obvious over the cited references when the references are taken alone or in combination and that the present invention possesses surprising and important advantages over the prior art. Applicant alleges that the Lewis et al. patent relies on non-modulated ion current to position a probe over a sample whereas the instant invention utilizes frequency-modulated scanning and that the apparatus taught by Lewis et al. is unsuitable for imaging living cells or samples having a convoluted surface. Applicant asserts that the combination of Lewis et al. with Islam or Tan would not achieve the instantly claimed invention because one of ordinary skill in the art must find both the suggestion of the claimed invention and a reasonable expectation to support a prima facie case of obviousness.

Applicant's arguments filed 8/26/04 have been fully considered but they are not persuasive.

Responding to Applicant's argument that Lewis et al. do not teach frequency-modulated scanning and that the invention of Lewis et al. is unsuitable for live cells, Applicant is directed to the response against claims 18-27, 35-39, 50 and 52 *supra*. Regarding Applicant's assertion that the instant invention has important advantages over the prior art, said alleged advantages are not claimed. With respect to Applicant's argument that the requirements for a case of obviousness have not been met, it is noted that the previous Office action met the factors required in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). The scope and contents of the prior art of the prior art were established by the disclosure of Lewis et al. The differences between the prior art and the claims at issue were established by noting that the disclosure by Lewis et al. lacks an assay component that produces a detectable change inside or at the surface of the cell, as well as a fiber optic probe. Islam discloses fiber optic probes for NSOM. The level of ordinary skill in the pertinent art was resolved by Tan which demonstrated that it is routine in the art of biochemistry to probe cells with substances that produce visible and fluorescent light and to use a pipette probe to deliver said substances. Further, motivation to substitute the optical probe of Lewis et al. with the fiber optic probe of Islam was established by the teachings of Tam which

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disclosed that it is well known in the art to combine near field optics with biomolecules detection at the surface or the inside of a cell.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Hanley whose telephone number is 571-272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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